



Blueprint for Five-Fold Growth of India's Space Sector

While deregulation and incentivization have spurred the growth of the country's space sector and fostered innovation, there's still a lot to be done to ensure commercial viability for developing a global space hub.

By Dr. Narayan Prasad, COO, SatSearch

Off late, there has been a lot of buzz in India's space sector with the formation of the Indian National Space Promotion and Authorisation Centre (IN-SPACe). The move is emblematic of the government's intent and motivation to open up the space sector to private participation.

In a recent interview, Pawan Kumar Goenka, Chairman of IN-SPACe mentioned that over 100 Indian space startups have emerged in the past two years.

The industry has also seen some significant activity supporting such intent with the handover of the Polar Satellite Launch Vehicle (PSLV) production to the HAL and L&T-led consortium recently by New Space India Limited (NSIL) to build five rockets over a four-year term with an estimated cost of 860 Crore INR.

Within the startup landscape, companies such as Pixxel,

Dhruva Space, Space Kidz India, etc., have their satellites launched onboard. The most recent success is that of Skyroot Aerospace launching its maiden suborbital rocket successfully.

However, India currently occupies just over 2% share of the global space market. While the government envisions capturing a larger share of the pie, some crucial aspects need to be tackled if India has to become a major space exporter. This has to be done by capitalizing on the talent, infrastructure, and experience built up over the decades.

Exposure to local demand

One of the key features of any successful space industry ecosystem around the world has been the hallmark of governments acting as first customers to risky products/services. This is done to enable their maturity to then leverage the fruits of success to scale to markets abroad.

The Government of India should come up with mechanisms to act as an anchor customer for new types of products/services to be developed by the industry. This will allow risk sharing for investment by the private sector in such areas. If the product/service works, it can then scale to customers around the world at a rapid pace.

For example, acting as an anchor customer to procure 50% of imagery produced at 1m resolution can plug the growing demand for satellite imagery in the country. This will allow the industry to compete and take risks to establish such capabilities locally. Once successful, the Indian industry can easily use such a product to then export both satellites and imagery/imagery-based services abroad.

Currently, the Government of India has made strong efforts to bring in regulatory frameworks with the creation of IN-SPACe. However, to go the full distance in reforms, there's a need to open up demand for space-based services in various ministries/departments to the private sector.

Exposing the private sector to local demand for space-based services (not just outsourcing of rockets or satellite manufacturing) will lead to rapid digital transformation of several sectors such as agriculture, infrastructure, fisheries, water management, etc., which can help the citizens at a fundamental level in improving their quality of life.

This could be done by integrating by various government ministries/departments. The Indian Space Research Organization (ISRO) can act as a project management platform to then run specific programs with the private sector competing with each other to cater to the demand.

True regulatory reform

IN-SPACe, the body that the government created to promote and regulate the space sector in India, does not have a legislative backbone to act independently in the space industry. It still operates within the Department of Space (DoS).

To be able to turn IN-SPACe into a true regulator, the government should provide it with a legislative mandate independent of DoS. This would enable it to function as a real regulator with an arm's length to ISRO/DoS.

The Telecom Regulatory Authority of India (TRAI) style legislative reform with an IN-SPACe bill can empower reforms to work at

a breakneck pace, enhancing the trust and whetting the appetite of foreign investors to work with the Indian space sector. True single-window regulatory reform would come when IN-SPACe does not need to wait for clearances from the Space Commission, DoS or the Cabinet, and has the authorization to take decisions for the regulatory management of space activities in its ambit.

Overhauling Procurement

Governments of advanced space-faring nations have been supporting their space agencies by continuously reforming their procurement processes. This is done by coming up with mechanisms for risk-sharing and fostering the maturity of critical technologies for cutting-edge products/services.

For example, the US government has supported NASA by creating special procurement reforms in the form of the NASA Space Act Agreement.

This has enabled the agency to enter into and perform such contracts, leases, cooperative agreements, or other transactions as may be necessary for the conduct of its work and on such terms as it may deem appropriate.

This has enabled NASA to develop special procurement programs such as the Commercial Orbital Transportation Services (COTS) and Commercial Crew Development (CCDev) which have had immense consequences for companies such as SpaceX.

Another interesting example is the use of Indefinite Delivery Indefinite Quantity (IDIQ) contracts by the defense establishments in the US such as the Space Force to provide contracts for immature

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technology products to come to fruition by procurement support based on their utility.

The Indian government needs to put in place procurement reforms that will allow innovative risk taking to support R&D / IP development by the private sector (both by SMEs and startups) in areas that have commercial scope. This will allow domestic companies to innovate new technologies of commercial interest at a higher pace, leading to a growth in exports.

Monitoring for Informed Policymaking

There is no comprehensive study that maps any real indices such as the number of people employed in the Indian space sector, our share of exports in space-based services, or the Foreign Direct Investment (FDI) into space.

There's a need for a special division, within the Promotion Directorate of IN-SPACe, to monitor the overall activity from a micro and macroeconomic standpoint. It can be put together with a mix of technologists, economists, social scientists, etc., who can work together to have a continuous measurement framework to monitor the rising space activities in the country.

This will also serve as a framework to measure activity on a year-on-year basis as well as use these metrics as primary information to perform policy changes that are based on concrete evidence-based measurements. Metrics such as FDI,

jobs created, the dollar value of exports, and several others can be selected as some of the key drivers for industry growth.

These can be tracked along with specific studies on other metrics such as an increase in air/water/crop yield quality, reduction in carbon emissions, etc.

For decades, we've been relegated to using opinion-based information to build policies. It's high time now that real frameworks that use economic and social metrics be used to drive policies to build a thriving space sector in the coming years.

Export Support

India is witnessing the emergence of some of the best downstream application companies backed by the country's software talent pool.

Companies such as Vassar Labs, SatSure, Aquaconnect, CropIn, etc., are great examples of how Indian entrepreneurs have been able to leverage a combination of space and software to build products that cater not just to businesses, but also communities. They have the potential for delivering tremendous societal impact in other developing countries as well. But can have a tremendous societal impact for other developing countries.

The problems, culture, and price points to access/afford solutions in several geographies around the world such as South Asia, Africa, Latin America, etc., are way closer to solutions that are emerging from India as

opposed to those from traditional space powers in the west.

However, there is a need to build bridges between solutions made in India with friendly developing geographies for promoting localized adaptation. IN-SPACe can help mature these solutions by working in sync with India's missions abroad. This can be done by identifying partners who can collaborate with the Indian industry to pass on the benefits to their communities. Over the course of time, this would boost the export of Indian space products and services.

Running thematic trade delegations by hand-holding the Indian industry to directly network with partners abroad could be a starting point.

Realizing the fruits of the latent capacity within the country can happen only when all the aforementioned dimensions are tackled head-on, with an independent focus on every aspect to accelerate the sector's growth.

Let us hope that the policy-makers are listening, and do step in to unleash the enormous potential that the country holds. 🙏



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